Space Weather Forecast

Issued on Sunday, 31 July 2022 at 13:09 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight Chance of G1/Minor Storm intervals, most likely on Days 1 or 2 (31 Jul-01 Aug).

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been very low over the past 24 hours, with no significant flares. There are currently two sunspots on the visible disc, with the new spot in the southwest quadrant having now faded. The largest region is in the southeast quadrant, with little change in the last 24 hours. The other region is near the southwest limb and remains small and simple. An eruption observed lifting off in the far southeast quadrant early on 30 July produced a Coronal Mass Ejection (CME), which is now considered unlikely to be Earth directed. No further Earth-directed CMEs were observed.

Solar Wind / Geomagnetic Activity: Solar winds may be showing a indications of the onset of a coronal hole fast wind. Wind speeds were slow-ambient in a range 320-370 km/s. The total interplanetary magnetic field (IMF) was weak to moderate, but recently started rising. The north-south component fluctuated moderately at times. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Activity is likely to remain low or very low, with only a very slight chance of Moderate-class flares.

Solar Wind / Geomagnetic Activity: No Earth directed CMEs are currently expected. Solar winds are currently at slow-ambient levels ahead of a possible weak coronal hole fast wind which may reach Earth during Day 1 (31 Jul). This feature has been closing up as it moves across the disc and may not give any significant enhancement at Earth, however. A stronger enhancement is possible from another coronal hole in the southern hemisphere early on Day 2 (01 Aug), slowly easing through Days 3 and 4 (02-03 Aug). With Earth well north of the solar equatorial plane, there is some uncertainty as to whether this will be seen at Earth.
Quiet geomagnetic activity may become Unsettled with Active intervals and a slight chance of G1/Minor Storms with the arrival of any fast wind, either on Days 1 or 2. Activity should slowly ease through Days 3 and 4.

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	20	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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